



WRITTEN SUBMISSION FOR THE PRE-BUDGET CONSULTATIONS IN ADVANCE OF THE UPCOMING 2025/26 FEDERAL BUDGET



**CANADA'S SEMICONDUCTOR COUNCIL (CSC), CMC MICROSYSTEMS,
INFORMATION AND COMMUNICATIONS TECHNOLOGY COUNCIL (ICTC), SEMICONDUCTOR
ECOSYSTEM CENTRE FOR TRAINING AND RESEARCH (SECTR), AND VENTURELAB**

RECOMMENDATIONS:

RECOMMENDATION 1: That Canada invests in targeted, industry-informed, applied training and workforce development initiatives to address talent gaps in the regional semiconductor industry.

RECOMMENDATION 2: That Canada make strategic investments in the domestic commercialization of its semiconductor industry by protecting the industry's intellectual property, which may be vulnerable to foreign buyers due to limited domestic capital availability.

RECOMMENDATION 3: That Canada invest in domestic semiconductor research, development, design, and commercial fabrication facilities, and enable increased collaboration with partners to strengthen and secure Canada's semiconductor supply chain and capitalize on growing global demand for semiconductor outputs.

ABOUT THE CONSORTIUM



ABOUT CANADA'S SEMICONDUCTOR COUNCIL: Canada's Semiconductor Council (CSC) is a national semiconductor industry organization representing a broad ecosystem of companies and institutions involved in the development and manufacturing of semiconductor components. CSC is dedicated to accelerating the growth and development of Canada's semiconductor sector. The organization's goal is to strengthen our domestic supply chain resiliency and future in the digital economy by establishing Canada as a leader for semiconductor research, design and development, and manufacturing at the forefront of commercialization and innovation for the global semiconductor industry.



ABOUT CMC MICROSYSTEMS: CMC Microsystems (CMC) is a national, not-for-profit organization that drives innovation within the semiconductor ecosystem. For over 40 years, CMC has been supporting advanced research and technology development through cutting-edge design, manufacturing, and testing. Supporting over 1,200 companies and 12,000 academic participants, CMC provides technical support and hands-on training to strengthen Canada's semiconductor pipeline. With funding from the Government of Canada's Strategic Innovation Fund (SIF), CMC has launched the FABrIC program to stimulate Canada's semiconductor industry. FABrIC funding will be applied to develop novel semiconductor processes and products in MEMS, photonics, and quantum technologies in fabrication facilities in Canada and to offer access to academics and start-up companies. FABrIC provides funding for prototyping and product development of Internet of Things (IoT) products for various market segments.



ABOUT THE INFORMATION AND COMMUNICATIONS TECHNOLOGY COUNCIL: The Information and Communications Technology Council (ICTC) is a national, neutral, not-for-profit centre of expertise whose mission is to strengthen Canada's digital advantage in the global economy. For more than 30 years, we have provided forward-looking research, practical policy advice, and innovative, industry-informed capacity development solutions for individuals, businesses and the public sector. Comprised of a national team of experts from coast to coast, our goal is to ensure that technology is used to drive economic growth and innovation, and that Canada's workforce remains globally competitive.



ABOUT THE SEMICONDUCTOR ECOSYSTEM CENTRE FOR TRAINING AND RESEARCH: The Semiconductor Ecosystem Centre for Training and Research (SECTR) is a not-for-profit organization dedicated to addressing Canada's growing semiconductor talent shortage. SECTR aims to equip individuals from diverse backgrounds with the skills needed to thrive in the semiconductor industry, foster innovation through research, and promote collaboration between educational institutions, industry, and government. Our mission is to create a skilled, diverse, and inclusive semiconductor workforce that will drive technological advancement and contribute to Canada's leadership in the global semiconductor ecosystem.



ABOUT VENTURELAB: ventureLAB is a leading global founder community for hardware technology and enterprise software companies in Canada. Located at the heart of Ontario's innovation corridor in York Region, ventureLAB is part of one of the biggest and most diverse tech communities in Canada. Our initiatives focused on raising capital, talent retention, commercializing technology and IP, and customer acquisition have enabled thousands of companies to create over 7,300 jobs and raise more than \$420 million in investment capital. At ventureLAB, we power hardtech founders to build and scale globally competitive ventures that advance Canada's knowledge-based economy.

BACKGROUND

With the right support, Canada's semiconductor industry is set to contribute billions of dollars and create thousands of jobs for the Canadian economy.¹ Strengthening Canada's semiconductor talent pipeline, safeguarding Canada's IP assets, and enhancing Canada's semiconductor supply chain are essential for Canada's economic success.

Semiconductors form the basis of the modern digital economy and are vital inputs to strategically important technologies, such as telecommunications, computing, automotive, advanced manufacturing machinery, and consumer electronics. They enable electric vehicles and battery storage. Semiconductor technology creates sensors that drive data for artificial intelligence, which can be used in applications ranging from smart buildings to healthcare to precision agriculture and clean tech. Canadian-designed semiconductors are the backbone of the modern internet, carrying traffic across the globe.

The semiconductor industry is poised to add billions of dollars to the Canadian economy thanks to growing demand for AI products and services and networking and computing infrastructure. Canadian firms report growing demand for their products and services, which will consequently lead to greater demand for highly qualified talent in the years to come.

Without a secure talent pipeline, protections for Canadian intellectual property ownership and retention, and the necessary facilities and infrastructure to fabricate semiconductors, Canada risks losing the immense growth opportunities generated by advanced digital technologies such as AI and quantum computing.

¹ Forthcoming semiconductor talent report, Canada Semiconductor Council (CSC).

STRENGTHEN CANADA'S SEMICONDUCTOR TALENT PIPELINE

RECOMMENDATION 1: That Canada invests in targeted, industry-informed, applied training and workforce development initiatives to address talent gaps in the regional semiconductor industry.

Canada has an opportunity to become an industry leader in key segments of the semiconductor supply chain. However, Canada's semiconductor talent pipeline is not keeping up with near-term growth, causing semiconductor firms to expand elsewhere. Talent is the number one limit on firm growth.

Canada possesses significant expertise in semiconductor research and development (R&D), design, and specialized manufacturing. While other regions excel in high-volume, low-margin segments, Canadian firms stand out in smaller-volume, high-margin areas—such as photonics, optical communications, compound semiconductors, and advanced packaging—which are critical to technologies like AI and quantum computing.

The country's current expertise comes from the early success of firms like Nortel, which inspired a generation of entrepreneurs in Toronto, Markham, Waterloo, Ottawa, Kanata, Montreal, Bromont, Calgary, Edmonton, and Vancouver, attracting a wealth of multinational firms to Canada.

However, Canada can only ride this wave for so long. Industry leaders warn that an inadequate talent pipeline jeopardizes Canada's growth. Growing firms report plans to establish their next design centers abroad or to hire talent remotely from regions like Texas, California, the Netherlands, and France due to a lack of local talent. The competition for highly qualified talent is also recognized by the industry as the primary barrier to retention; enhancing Canada's domestic commercialization efforts to compete better with multinationals can strengthen talent retention. Moreover, Canada's expertise in specialized chip design and fabrication necessitates a unique

balance of locally specific jobs and skills. Securing Canada's semiconductor talent pipeline through regionally tailored workforce development is essential for sustained success.

The window of opportunity to secure Canada's semiconductor talent pipeline is closing. Firms face mounting pressure to meet growing demand and may choose to invest elsewhere if Canada's talent supply can't keep up.

Industry leaders have stated that the current model for developing talent in postsecondary institutions is no longer adequate to provide the skills necessary for the semiconductor industry. Postsecondary training must be supplemented with industry-informed training tailored to the rapidly evolving semiconductor sector. Simultaneously, widespread retirements indicate that Canada faces a swiftly closing window of opportunity to transfer its expertise in photonics, optical communications, compound semiconductors, and advanced packaging to the next generation.

Several industry organizations have begun to research the industry's workforce needs and develop upskilling and reskilling programs to develop highly qualified talent. These initiatives will directly support industry needs while also supporting adjustments in Canada's labour force to address shifting labour market demands. However, industry leaders stress the need for urgent action, including additional federal support to bridge the widening gap in semiconductor talent through targeted, regionally specific, applied training and workforce development initiatives.

PROTECT CANADA'S COMMERCIAL INTERESTS

RECOMMENDATION 2: That Canada make strategic investments in the domestic commercialization of its semiconductor industry by protecting the industry's intellectual property, which may be vulnerable to foreign buyers due to limited domestic capital availability.

Canada risks losing strategic intellectual property (IP) and businesses due to the current economic climate. Canadian firms may face pressure to exit to foreign buyers or move their operations or headquarters abroad. A weak Canadian dollar may make Canadian startups and IP more attractive to foreign buyers.

Even without the threat of tariffs from Canada's largest trading partner, the small domestic semiconductor market in Canada and a lack of scaling capital often drives Canadian companies to relocate their offices or executive teams south of the border. ICTC's research indicates that Canadian inventors and entrepreneurs frequently sell viable products or businesses to foreign buyers instead of commercializing their innovations domestically.² Furthermore, being acquired or bought out by a foreign entity is a common form of "exit" for Canadian startups.³

While the risk of losing Canadian startups and IP to foreign buyers has long threatened Canada's domestic industries, it is particularly pronounced during times of economic hardship.

Revenue and capital become more difficult to secure, founders and CEOs face greater pressure from investors to exit, and exchange rates make the acquisition of Canadian firms more favorable to international actors.

According to a 2024 report by the CSA Group, Canada is home to an estimated 500 semiconductor and electronics component firms. The industry primarily consists of small firms employing fewer than 100 workers, making them particularly vulnerable to economic risk.⁴ Although foreign acquisitions can provide valuable exit opportunities for Canadian startups, as seen with Nortel, which inspired a new generation of startups, the local industry still requires a sufficient critical mass of highly skilled workers, strong leaders with sophisticated business acumen, the right IP rights, connections to global supply chains, and local employment opportunities to turn acquisitions into new opportunities for domestic businesses.⁵ The increased risk of losing strategic IP and businesses to foreign markets underscores the need for targeted support for Canada's semiconductor industry.

² Mairead Matthews and Faun Rice, "Context Matters: Strengthening the Impact of FDI on Canadian Innovation," Information and Communications Technology Council (ICTC), March 2022, <https://ictc-ctic.ca/reports/context-matters>.

³ Ibid.

⁴ Daniel Munro and Creig Lamb, "Chip Shot: A Semiconductor Strategy for Canada," CSA Group, June 2024, <https://www.csagroup.org/article/public-policy/chip-shot-a-semiconductor-strategy-for-canada/>.

⁵ Mairead Matthews and Faun Rice, "Context Matters: Strengthening the Impact of FDI on Canadian Innovation," Information and Communications Technology Council (ICTC), March 2022, <https://ictc-ctic.ca/reports/context-matters>.

Intangible assets such as data, production processes, business relationships, and IP are crucial for success in the semiconductor industry. Companies that possess foundational IP control the key technologies in the industry, allowing them to restrict access to these technologies and generate significant revenue through licensing and sales. Those without foundational IP face limitations in their ability to participate in the semiconductor industry; they must rely on licensing agreements and partnerships, limiting their capacity to leverage certain technologies.

Strategic investments to protect the IP developed by Canada's semiconductor industry, as well as to retain and support domestic commercialization, are critical to protecting Canada's position in the semiconductor space. Some industry actors, such as CMC through its FABrIC initiative, have begun creating intellectual property repositories to facilitate new market entrants in producing application-specific components while reducing development costs and timelines. However, securing Canada's semiconductor industry requires greater support for IP protections and incentives to boost domestic investments through innovative solutions, such as deep tech investment funds.

SECURE CANADA'S SEMICONDUCTOR SUPPLY CHAIN

RECOMMENDATION 3: That Canada invest in domestic semiconductor research, development, design, and commercial fabrication facilities and enable increased collaboration with partners to strengthen and secure Canada's semiconductor supply chain and capitalize on growing global demand for semiconductor outputs.

Canada must ensure its access to global supply chains to remain competitive in strategic industries like AI and quantum computing. While complete self-sufficiency is unnecessary, investing in domestic research and development and collaborating with global partners is crucial for maintaining economic and technological security.

Without a secure semiconductor supply chain, Canada will not be able to fully participate in the global digital economy or transformational technologies like AI and quantum computing. Strengthening the integrity, resilience, and connectedness of Canada's semiconductor supply chain is an issue of national importance.

Canada is the only G7 nation without a semiconductor strategy. Over time, the failure to access and participate in global semiconductor supply chains will degrade Canada's status as an advanced economy and weaken its influence over technological developments. The globally integrated nature of the semiconductor supply chain does not necessitate Canada pursuing self-sufficiency; rather, Canada must ensure continuous, uninterrupted supply chain access in collaboration with partners in North America, Europe, and Asia through agreements like CETA and TPP.

Canada should also expand its domestic research, development, design, and fabrication capacity to the greatest extent possible, focusing on specialized chip design and fabrication to leverage its strengths. Canada should encourage collaboration between the private sector and academic institutions and foster partnerships between academic institutions to amplify Canada's R&D capabilities and improve return on investment. Leveraging Canada's strengths in specialized semiconductor chips can enhance its bargaining position in the global marketplace.

However, more action is needed to secure Canada's supply chain, including strategic investments in new facilities. This may involve developing new photonics fabs to increase capacity beyond the prototype level. Additionally, a power semiconductor fab would enhance existing companies in Canada that create devices for power management in electric vehicles and grid battery storage. Increased support from the federal government to improve Canada's commercial fabrication facilities and bolster its research and development activities will help ensure that Canada and its citizens are well-positioned to engage in the global semiconductor supply chain and benefit economically from growth and well-paying jobs linked to the industry.